

crosslinked to form an organic polymer layer.

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A<sub>6</sub> 21. A material as claimed in claim 2 having a general formula  $X'_2 M_m O_{3m+1}$  wherein M is the metal, and X' is an organic cation and m=1, 2, 3.

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A<sub>7</sub> 23. A material as claimed in claim 21 wherein the configuration of organic layer relative to the inorganic layer is staggered.

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A<sub>8</sub> 28. A material as claimed in claim 25 wherein one or both organic cation is an aromatic ammonium cation.

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A<sub>9</sub> 30. A material as claimed in claim 28 in which adjacent aromatic rings are crosslinked to form an organic polymer layer.

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A<sub>10</sub> 32. A material as claimed in claim 1 wherein dopants are introduced into the structure.

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36. A material of claim 1 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

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A<sub>11</sub> 37. An organic/inorganic oxide material of claim 1 in which the oxide layer comprising  $Mo_4$ ,  $M_2O_7$  or  $M_m O_{3m+1}$  is wholly replaced by any of the following oxide layers  $CuO_2$ ,  $NiO_2$ ,  $CoO_2$ ,  $CuO_2CaCuO_2$ ,  $Ca_{m-1}Cu_mO_{2m}$ , m=1, 2, 3,...,  $NiO_2CaNiO_2$ ,  $Ca_{m-1}Ni_mO_{2m}$ , m=1, 2, 3,..., square pyramidal  $MnO_3$ , square pyramidal  $RuO_3$ , octahedral  $RuO_4$ , O-Mn<sub>2</sub>-Y-MnO<sub>2</sub>-O, O-MnO<sub>2</sub>-Ca-MnO<sub>2</sub>-O, O-RuO<sub>2</sub>-YRuO<sub>2</sub>-O, or O-RuO<sub>2</sub>-Ca-RuO<sub>2</sub>-O.

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